	Hits	Search Text	DBs
1	40	(lob or large$2data$1object$1) and model$1 and director$6 and root$1	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB
2	3	1 and (header$1 same (name$1 or unit$1 or (geometric near5 range$1)))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB
3	37	1 not 2	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB
4	4	3 and header$1	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB
5	3	4 and (control$4 and graphic)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB
6	0	6 and compress$4 and encryp$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB

	Hits	Search Text	DBs
7	1	6 and compress$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB
8	2	6 not 8	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB

9/929,277

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File 347:JAPIO Dec 1976-2005/Dec(Updated 060404)
         (c) 2006 JPO & JAPIO
File 350:Derwent WPIX 1963-2006/UD=200651
         (c) 2006 The Thomson Corporation

Set      Items    Description
S1      146249    MODEL? ?
S2     1401790    DIRECTOR??? OR STORAGE? ? OR HIERARCH? OR TREE? ? OR BTREE?
                   ? OR ROOT? ? OR FILE()SYSTEM? ? OR DATA()(STRUCTURE? ? OR AR-
                  CHITECTURE? ?)
S3       54041    HEADER? ?
S4     7823935    DESCRIPT??? OR IDENTIFIE? ? OR IDENTIFY??? OR IDENTIFICATI-
                  ON OR INDICATOR? ? OR NAME? ? OR UNIT? ? OR GEOMETR?? OR RANG-
                  E? ?
S5      132436    ELEMENT? ?(3N)(CHUNK? ? OR PIECE? ? OR SEGMENT? ? OR SECTI-
                  ON? ? OR PORTION? ? OR PART OR PARTS OR PARTIAL??)
S6      160080    (VARIABL?? OR DIFFERENT?? OR CHANG???? OR VARY??? OR VARIE?
                   ?)(3N)(SIZE? ? OR LENGTH? ?)
S7       14037    S1 AND S2 AND S3:S4
S8           2    S7 AND S5 AND S6
S9        1857    S7 AND ELEMENT? ?
S10         16    S9 AND S6
S11         14    S10 NOT S8
S12          6    S11 NOT AD=20010815:20040815/PR
S13          6    S12 NOT AD=20040815:20060815/PR
S14      15964    COMPUTER()AIDED()DESIGN??? OR CAD OR CADD OR CADCAM
S15         94    S14 AND S9
S16         79    S15 AND IC=G06F
S17         50    S16 NOT AD=20010815:20040815/PR
S18         45    S17 NOT AD=20040815:20060815/PR
S19         45    S18 NOT (S8 OR S13)
S20          3    S19 AND (VARIABL? OR VARY??? OR VARIE? ?)
S21         10    S9 AND S3
S22          9    S21 NOT (S8 OR S13 OR S20)
S23          6    S19 AND (GRAPHIC?? OR IMAG??? OR DRAW???)(3N)ELEMENT? ?
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8/5/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0013276599 - Drawing available
WPI ACC NO: 2003-362701/
Related WPI Acc No: 2003-353834
XRPX Acc No: N2003-289727
Element chunk storage **method in computer system, involves assigning preselected number of** elements **to each** element chunk **of control** element **list and graphic element list stored in** model **of** model directory
Patent Assignee: BENTLEY K (BENT-I)
Inventor: BENTLEY K
Patent Family (1 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	
US 20030037182	A1	20030220	US 2001929277	A	20010815	200334	B

Priority Applications (no., kind, date): US 2001929277 A 20010815

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 20030037182	A1	EN	25	12	

Alerting Abstract US A1

NOVELTY - A **model directory** storing a **model** , is stored in a **root storage** of a **storage** area. A graphic element list having graphic **element chunks** and control **element** list having control **element chunks** , are stored in the **model** for assigning preselected number of **elements** to each **element chunk** . The **elements** are allocated to the **element chunk** in one of the control element list and graphic element list.

DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

1.compressed element chunk modification method;

2.encrypted element chunk modification method;

3.compressed element chunk modifying computer system;

4.encrypted element chunk modifying computer system;

5.file reading method;

6.modified compressed element chunk reading method; and

7.element chunks reading method.

USE - For **storing element** chunk in computer system such as Intranet, Internet, LAN, etc.

ADVANTAGE - Provides enhanced file format and stores large quantities **of variable** -sized data records on **a** storage medium. Enables to permit efficient access and control over data stored in the enhanced file format.

DESCRIPTION OF DRAWINGS - The figure shows the block diagram of high level network environment-based computer system for handling large data files.

Title Terms/Index Terms/Additional Words: ELEMENT; CHUNK; **STORAGE** ; METHOD ; COMPUTER; SYSTEM; ASSIGN; PRESELECTED; NUMBER; CONTROL; LIST; GRAPHIC; **MODEL** ; **DIRECTORY**

Class Codes
International Classification (Main): G06F-009/00
US Classification, Issued: 709328000

File Segment: EPI;
DWPI Class: T01; W01
Manual Codes (EPI/S-X): T01-D01; T01-F02C; T01-F05E; T01-J05B2; T01-J05B4P; T01-N01D; T01-N02B1; W01-A05A

8/5/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0013268000 - Drawing available
WPI ACC NO: 2003-353834/
Related WPI Acc No: 2003-362701
XRPX Acc No: N2003-282717
Computer readable medium e.g. compact disk, stores model **having** model header **and** element **list containing** element chunk **with** header
Patent Assignee: BENTLEY K (BENT-I); BENTLEY SYSTEMS INC (BENT-N)
Inventor: BENTLEY K
Patent Family (4 patents, 100 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	
US 20030036888	A1	20030220	US 2001929278	A	20010815	200333	B
WO 2003017567	A1	20030227	WO 2002US25767	A	20020814	200333	E
EP 1417800	A1	20040512	EP 2002757100	A	20020814	200431	E
			WO 2002US25767	A	20020814		
AU 2002323138	A1	20030303	AU 2002323138	A	20020814	200452	E

Priority Applications (no., kind, date): US 2001929277 A 20010815; US 2001929278 A 20010815

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 20030036888	A1	EN	24	12	
WO 2003017567	A1	EN			

National Designated States,Original: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW
Regional Designated States,Original: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW

Number	Kind	Lan	Pg	Dwg	Filing Notes
EP 1417800	A1	EN			PCT Application WO 2002US25767; Based on OPI patent WO 2003017567

Regional Designated States,Original: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI SK TR

Number	Kind	Lan	Pg	Dwg	Filing Notes
AU 2002323138	A1	EN			Based on OPI patent WO 2003017567

Alerting Abstract US A1
NOVELTY - A computer readable medium contains file for storing **root storage** including a **model directory** comprising at least one **model** , which includes a **model header** . The **model** also contains element list with an **element chunk** , which comprises **chunk header** and an **element** associated with the **chunk header** .
DESCRIPTION - An INDEPENDENT CLAIM is also included for computer program product.
USE - E.g. compact disk (CD), CD-ROM for storing computer aided design (CAD) files, data files used in public sector, E-commerce, financial/insurance industry, travel industry, publishing industry, graphic arts industry, advertising industry, etc.
ADVANTAGE - Provides enhanced file format to store large quantities of **variable sized** data records on hard disk and permits efficient access and control over data stored in the enhanced file format.
DESCRIPTION OF DRAWINGS - The figure shows block diagram of the high level computer network for handling data files.

Title Terms/Index Terms/Additional Words: COMPUTER; READ; MEDIUM; COMPACT; DISC; **STORAGE** ; **MODEL** ; **HEADER** ; ELEMENT; LIST; CONTAIN; CHUNK

Class Codes
International Classification (Main): G06F-017/50, H04L-009/00
(Additional/Secondary): G06F-012/14, G06F-017/00, G06F-007/00
US Classification, Issued: 703001000

File Segment: EPI;
DWPI Class: T01; W01
Manual Codes (EPI/S-X): T01-H01B2; T01-H05B2; T01-J05B2B; T01-S03

13/5/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0010775339 - Drawing available
WPI ACC NO: 2001-389907/
XRPX Acc No: N2001-286847
Computerised method of laying out document containing combination of text and shape elements **, using interface system for laying out documents templates represented as** tree **of text and shape** elements **, including variable** elements
Patent Assignee: BITSTREAM INC (BITS-N)
Inventor: CARUSO J L; HOLLINGSWORTH D E; HOUDE S L; KITSOS C; MOHR E; TREVITHICK P B
Patent Family (3 patents, 92 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	
WO 2001039019	A2	20010531	WO 2000US32195	A	20001122	200141	B
AU 200117955	A	20010604	AU 200117955	A	20001122	200153	E
US 6826727	B1	20041130	US 1999449688	A	19991124	200479	E

Priority Applications (no., kind, date): US 1999449688 A 19991124

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
WO 2001039019	A2	EN	135	103	

National Designated States,Original: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
Regional Designated States,Original: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

Number	Kind	Lan	Pg	Dwg	Filing Notes
AU 200117955	A	EN			Based on OPI patent WO 2001039019

Alerting Abstract WO A2
NOVELTY - A user interface is used to enable user to define a sequence box, and shape **elements** in it, including shapes having maximum and/or minimum property in at least one direction. The system automatically lays out **elements** of the document, and arranges shape **elements** , which can both expand and contract within a sequence box.
DESCRIPTION - Automatic laying out of document **elements** includes arranging shape **elements** within sequence box along the sequencing axis, **varying** the **size** of shape **element** to minimize or maximize the property in given dimension by making the **element** as small as its contents or to make it expand so as to encompass space available within sequence box in given dimension. A disk including operating system program (112) provides a graphical user interface to the computer (102) including CPU (104). The **tree** -shaped **data structure** is represented by a nesting of **elements** start and end tags of their parent **elements** .
USE - For automatically laying out documents in the context of variable data publishing.
ADVANTAGE - Automatic laying out ability provides useful tool for automatically arranging and sizing document **elements** in response to changes in variable data, particularly for sequence boxes nested.
DESCRIPTION OF DRAWINGS - Drawing shows schematic block diagram of a system for performing variable data publishing that embodies many aspects of the present invention.
102 Computer
104 Central processing **unit**
112 Operating system program

Title Terms/Index Terms/Additional Words: COMPUTER; METHOD; LAY; DOCUMENT; CONTAIN; COMBINATION; TEXT; SHAPE; **ELEMENT** ; INTERFACE; SYSTEM; TEMPLATE ; REPRESENT; **TREE** ; VARIABLE

Class Codes

International Classification (Main): G06F-017/00, G06F-017/21
US Classification, Issued: 715517000, 382180000, 715514000
File Segment: EPI;
DWPI Class: T01
Manual Codes (EPI/S-X): T01-J11B; T01-J12B1

20/5/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0005645067 - Drawing available
WPI ACC NO: 1991-255136/
XRPX Acc No: N1991-194579
Computer aided processing of geometrical constructional objects - has model **data and relative constantly retrieved, modified and stored and freed memory locations processed during** model **working process**
Patent Assignee: FRAUNHOFER GES FOERDERUNG (FRAU); FRAUNHOFER GES FOERDERUNG ANGEWANDTEN (FRAU); FRAUNHOFER-GES FORD ANGE (FRAU)
Inventor: MUENKE M; MUNKE M
Patent Family (4 patents, 2 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	
GB 2241362	A	19910828	GB 19913539	A	19910220	199135	B
DE 4021946	A	19910829	DE 4005853	A	19900223	199136	E
			DE 4021946	A	19900710		
DE 4021946	C	19920820	DE 4021946	A	19900710	199234	E
GB 2241362	B	19931215	GB 19913539	A	19910220	199350	E

Priority Applications (no., kind, date): DE 4021946 A 19900710; DE 4005853 A 19900223
Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
DE 4021946	C	DE	29	7	
GB 2241362	B	EN	2	1	

Alerting Abstract GB A
Model data and relations are constantly retrieved, modified and stored and freed memory locations are processed during the **model** working process, and data from **CAD** **models** which are already generated, and which are stored e.g. in a hard disc data file, can be read into a **model** **data** **structure** to be processed for common further processing. The **model** data and relations are structured in a particular manner and partial structures are formed, which are each bounded by a start and an end address and the start address together with the end address and the associated partial structures are stored separately and can be retrieved separately.
The method is carried out in a **CAD** work station which additionally comprises a functional memory system, which consists of a functional access control, a structure processor, a table memory and a word organised **model** data memory, as well as a buffer stage and a bush interface for coupling the functional memory system to the system bus of the CAS work station.
ADVANTAGE - Improved operation performance.
Equivalent Alerting Abstract DE C
The **CAD** work station computer described has a central processing **unit** with its RAM, an alphanumeric input/output, a graphics input/output system, an information **storage** system (rigid discs), and a system bus connecting these parts together. In addition there is a function memory system for managing the **CAD** **model** data and providing access to it and this includes a buffer stage, with severalk FIFO (first in, first out) registers for communciating between the central **unit** and the memory system. There is a functional access control for moving **model** data to and from the buffer stage.
Also, there is a structure processor, activated by the functional access control, for changing the organisation of the data and the structure of parts, a table memory for geometrical data, a **model** data memory with several memory banks working in parallel, and the functional access control and the structure processor can have access to these memories and the

buffer stage.
USE/ADVANTAGE - There is an improvement in the efficiency with which **model** data is stored and used. It is suitable for general engineering use in **CAD** , that is, **computer - aided design** .

Title Terms/Index Terms/Additional Words: COMPUTER; AID; PROCESS; **GEOMETRY** ; CONSTRUCTION; OBJECT; **MODEL** ; DATA; RELATIVE; CONSTANTLY; RETRIEVAL; MODIFIED; **STORAGE** ; FREE; MEMORY; LOCATE; WORK

Class Codes
International Classification (Main): **G06F-015/60**

File Segment: EPI;
DWPI Class: T01
Manual Codes (EPI/S-X): T01-J10C; T01-J15

23/5/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0010835397
WPI ACC NO: 2001-453226/200149
XRPX Acc No: N2001-335579
Computer aided design **software package for three-dimensional modelling, involves assessing separately stored** model **construction data to produce associated data tags of** image elements
Patent Assignee: SOLIDWORKS CORP (SOLI-N)
Inventor: HAN Z; HARRISON B; SHOOV B; ZUFFANTE R P
Patent Family (4 patents, 29 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	
EP 1122692	A2	20010808	EP 2001102391	A	20010202	200149	B
CA 2333811	A1	20010803	CA 2333811	A	20010201	200154	E
JP 2001282878	A	20011012	JP 200128722	A	20010205	200176	E
US 6611725	B1	20030826	US 2000180076	P	20000203	200357	E
			US 2000668852	A	20000925		

Priority Applications (no., kind, date): US 2000180076 P 20000203; US 2000668852 A 20000925

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
EP 1122692	A2	EN	17	5	

Regional Designated States,Original: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR

Number	Kind	Lan	Pg	Dwg	Filing Notes
CA 2333811	A1	EN			
JP 2001282878	A	JA	45		
US 6611725	B1	EN			Related to Provisional US 2000180076

Alerting Abstract EP A2
NOVELTY - The **computer aided design** (**CAD**) package is used to construct drawing documents that include vector drawing data to display 2D views of a 3D **model** and tag data associating each **image element** with separate components of the design image documents. The **model** components are linked in a **hierarchical data structure** that includes parent-child relationships of **model** features i.e. edges and vertices.
DESCRIPTION - INDEPENDENT CLAIMS are included for:

1. A method for processing a drawing document generated by a CAD system.

2. A computer program for managing the storage of CAD generated design models .

3. A computer program for managing the storage of CAD generated drawing documents.

4. A computer system capable of running CAD software.

USE - Manipulation, annotation and updating to individual components of **CAD** generated 3D images.
ADVANTAGE - Designers can send a drawing file to another designer without sending associated **model** component files, while still being able to annotate and change the **model** file. Changes are automatically maintained and updated as underlying **model** data is changed. Drawing documents can be opened and changes made to a 3D **model** without requiring access to other

model documents. Designers can control when a drawing is updated to a **model** i.e. the synchronization process can be user controlled.

Title Terms/Index Terms/Additional Words: COMPUTER; AID; DESIGN; SOFTWARE; PACKAGE; THREE; DIMENSION; **MODEL** ; ASSESS; SEPARATE; **STORAGE** ; CONSTRUCTION; DATA; PRODUCE; ASSOCIATE; TAG; IMAGE; **ELEMENT**

Class Codes
International Classification (Main): **G06F-017/50** , **G06F-019/00** , G06T-017/40
(Additional/Secondary): **G06F-017/21** , **G06F-017/30**
US Classification, Issued: 700098000, 700182000, 345420000
File Segment: EPI;
DWPI Class: T01
Manual Codes (EPI/S-X): T01-F02C1; T01-J10C4; T01-J10C5; T01-J15X; T01-S03

23/5/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0007495828 - Drawing available
WPI ACC NO: 1996-107868/199612
XRPX Acc No: N1996-090289
Geometric **constraint conditions displaying appts for regulating positional relationship between** elements **- has first memory section for storing number items of graphic display data for displaying each of number of multi-dimensional graphics**
Patent Assignee: FUJITSU LTD (FUIT)
Inventor: KONDO H; KUROYANAGI S; NAGAKURA M
Patent Family (8 patents, 4 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	
GB 2292657	A	19960228	GB 199512335	A	19950616	199612	B
JP 8063495	A	19960308	JP 1994199978	A	19940824	199620	E
GB 2292657	B	19980805	GB 199512335	A	19950616	199833	E
US 5784063	A	19980721	US 1995490012	A	19950613	199836	E
KR 186788	B1	19990515	KR 199519720	A	19950706	200053	E
JP 2002183226	A	20020628	JP 1994199978	A	19940824	200258	E
			JP 2001346680	A	19940824		
JP 3374140	B2	20030204	JP 1994199978	A	19940824	200317	E
			JP 2001346680	A	19940824		
JP 3663219	B2	20050622	JP 1994199978	A	19940824	200541	E

Priority Applications (no., kind, date): JP 2001346680 A 19940824; JP 1994199978 A 19940824

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
GB 2292657	A	EN	57	10	
JP 8063495	A	JA	14		
JP 2002183226	A	JA	12		Division of application JP 1994199978
JP 3374140	B2	JA	11		Division of application JP 1994199978
					Previously issued patent JP 2002183226
JP 3663219	B2	JA	16		Previously issued patent JP 08063495

Alerting Abstract GB A
The appts includes a first **storage** device for storing number items of graphic display data for displaying each of the number of multi-dimensional graphics. A second **storage** device is used for storing **geometric** constraint conditions and a displaying device for displaying a number multi-dimensional graphics based on number items of the graphic display data stored in the first **storage** device.
Such arrangement is performed within multi-dimensional space in positional relationship in conformity with **geometric** constraint conditions stored in second **storage** device.
USE/ADVANTAGE - In multi-dimensional **CAD** . Provision for easy editing of **geometric** constraint conditions, which improves efficiency of moving multi-dimensional graphics.

Title Terms/Index Terms/Additional Words: **GEOMETRY** ; CONSTRAIN; CONDITION; DISPLAY; APPARATUS; REGULATE; POSITION; RELATED; **ELEMENT** ; FIRST; MEMORY ; SECTION; **STORAGE** ; NUMBER; ITEM; GRAPHIC; DATA; MULTI; DIMENSION

Class Codes
International Classification (Main): **G06F-017/50** , G06T-017/40, G06T-007/60
US Classification, Issued: 345420000

File Segment: EPI;
DWPI Class: T01
Manual Codes (EPI/S-X): T01-J10C

23/5/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

0005522925 - Drawing available
WPI ACC NO: 1991-126652/199118
XRPX Acc No: N1991-097465
Multiprocessor graphics display system - has system control processor converting application program information for communication to graphics control processor for traversal
Patent Assignee: IBM CORP (IBMC); INT BUSINESS MACHINES CORP (IBMC)
Inventor: LIANG B; LIANG B C; LIANG N; LIANG N Y; PHELPS M; PHELPS M J; TANNENBAUM D; TANNENBAUM D C
Patent Family (3 patents, 4 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	
EP 425172	A	19910502	EP 1990311366	A	19901017	199118	B
US 5182797	A	19930126	US 1989425891	A	19891023	199307	E
			US 1992890306	A	19920527		
EP 425172	A3	19920902	EP 1990311366	A	19901017	199338	E

Priority Applications (no., kind, date): US 1992890306 A 19920527; US 1989425891 A 19891023

Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
EP 425172	A	EN			
Regional Designated States,Original: DE FR GB IT					
US 5182797	A	EN	13	8	Continuation of application US 1989425891
EP 425172	A3	EN			

Alerting Abstract EP A

The system includes a general purpose system control processor (112) for setting up the work station environment and data traversal structures. Workload balancing and inter processor communication is managed by defining a general purpose interface between the system control processor (112) and special purpose graphics control processor (114).

The system control processor converts application program information into generalizid interface control blocks for communication to the graphics control processor. The graphics control processor can then access the standard control blocks contained in system memory (113) and perform the traversal necessary to generate the graphics image.

USE/ADVANTAGE - Graphics display system for displaying graphics objects defined by **hierarchical** structure of **graphics** display **elements** for use in e.g. **CAD** and CAE systems. General control blocks allow rapid adaptation to program changes and efficient communication between general purpose and special purpose processors.

Equivalent Alerting Abstract US A

The multi-processor graphics system includes a general purpose system control processor for setting up the work station environment and data traversal structures based upon an application **model** language **description** . Workload balancing and inter processor communication is managed by defining a general purpose interface between the general purpose processor and special purpose graphics control processor. The system control processor accepts application program information in a standard form, such as a **hierarchical** graphics language definition, then converts it into generalised interface control blocks for communication to the graphics control processor.

The graphics control processor is signalled by an interrupt from the system control processor to begin the traversal process. The graphics control processor can then access the standard control blocks contained in system memory and perform the traversal necessary to generate the requested graphics image.

ADVANTAGE - Generalised control blocks allow rapid adaptation to program changes and efficient communication between general purpose and specialised processors.

Title Terms/Index Terms/Additional Words: MULTIPROCESSOR; GRAPHIC; DISPLAY; SYSTEM; CONTROL; PROCESSOR; CONVERT; APPLY; PROGRAM; INFORMATION; COMMUNICATE; TRAVERSE

Class Codes

International Classification (Main): **G06F-003/14**
(Additional/Secondary): **G06F-015/72**
US Classification, Issued: 395160000, 395161000, 395164000

File Segment: EPI;
DWPI Class: T01
Manual Codes (EPI/S-X): T01-J02; T01-J10C

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File   2:INSPEC 1898-2006/Aug W1
         (c) 2006 Institution of Electrical Engineers
File   6:NTIS 1964-2006/Aug W1
         (c) 2006 NTIS, Intl Cpyrght All Rights Res
File   8:Ei Compendex(R) 1970-2006/Aug W1
         (c) 2006 Elsevier Eng.  Info. Inc.
File  23:CSA Technology Research Database 1963-2006/Jul
         (c) 2006 CSA.
File  34:SciSearch(R) Cited Ref Sci 1990-2006/Aug W1
         (c) 2006 The Thomson Corp
File  35:Dissertation Abs Online 1861-2006/Jun
         (c) 2006 ProQuest Info&Learning
File  65:Inside Conferences 1993-2006/Aug 15
         (c) 2006 BLDSC all rts. reserv.
File  94:JICST-EPlus 1985-2006/May W1
         (c)2006 Japan Science and Tech Corp(JST)
File  95:TEME-Technology & Management 1989-2006/Aug W2
         (c) 2006 FIZ TECHNIK
File  99:Wilson Appl. Sci & Tech Abs 1983-2006/Jul
         (c) 2006 The HW Wilson Co.
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         (c) 2006 American Mathematical Society
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         (c) 2006 Info.Sources Inc
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
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Set     Items   Description
S1   10465243   MODEL? ?
S2    2970948   DIRECTOR??? OR STORAGE? ? OR HIERARCH? OR TREE? ? OR BTREE?
              ? OR ROOT? ? OR FILE()SYSTEM? ? OR DATA()(STRUCTURE? ? OR AR-
             CHITECTURE? ?)
S3      15433   HEADER? ?
S4   12817631   DESCRIPT??? OR IDENTIFIE? ? OR IDENTIFY??? OR IDENTIFICATI-
             ON OR INDICATOR? ? OR NAME? ? OR UNIT? ? OR GEOMETR?? OR RANG-
             E? ? OR TAG OR TAGS OR TAGGED OR TAGGING
S5      35739   ELEMENT? ?(3N)(CHUNK? ? OR PIECE? ? OR SEGMENT? ? OR SECTI-
             ON? ? OR PORTION? ? OR PART OR PARTS OR PARTIAL??)
S6     336579    (VARIABL?? OR DIFFERENT?? OR CHANG???? OR VARY??? OR VARIE?
              ?)(3N)(SIZE? ? OR LENGTH? ?)
S7     147345    S1 AND S2 AND S3:S4
S8          2    S7 AND S5 AND S6
S9        176    S7 AND S5
S10    387394   COMPUTER()AIDED()DESIGN??? OR CAD OR CADD OR CADCAM
S11      3833   S10 AND S7
S12        20   S11 AND S5
S13        15   RD  (unique items)
S14         9   S13 NOT PY=2002:2006
S15         6   S10 AND S5 AND S6
S16         4   RD  (unique items)
S17       543   S10 AND S7 AND ELEMENT? ?
S18    336579   S6(3N)(VARIABL?? OR DIFFERENT?? OR CHANG???? OR VARY??? OR
             VARIE? ?)
S19        23   S10 AND S7 AND S18
S20        15   RD  (unique items)
S21        10   S20 NOT PY=2002:2006
S22        10   S21 NOT (S8 OR S14 OR S16)
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S23	23457	ELEMENT? ?(3N)(GRAPHIC?? OR IMAG??? OR DRAW???)
S24	161	S23 AND S7
S25	26	S24 AND S10
S26	19	RD (unique items)
S27	17	S26 NOT PY=2002:2006
S28	17	S27 NOT (S8 OR S14 OR S16 OR S22)

14/5/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

06296122 INSPEC Abstract Number: C9607-7440-080
Title: A neutral object data model **for integrated building design and construction environment**
Author(s): Kiwan, M.S.; Munns, A.K.
Author Affiliation: Dept. of Civil Eng., Dundee Univ., UK
Journal: Advances in Engineering Software Conference Title: Adv. Eng. Softw. (UK) vol.25, no.2-3 p.131-40
Publisher: Elsevier,
Publication Date: March-April 1996 Country of Publication: UK
CODEN: AESODT ISSN: 0965-9978
SICI: 0965-9978(199603/04)25:2/3L.131:NODM;1-R
Material Identity Number: P826-96005
U.S. Copyright Clearance Center Code: 0965-9978/96/$15.00
Conference Title: CIVIL-COMP 93, the Fifth International Conference on Civil and Structural Engineering Computing and Artificial Intelligence CIVIL-COMP 93, the Third International Conference in the Application of Artificial Intelligence to Civil and Structural Engineering
Conference Date: 17-19 Aug. 1993 Conference Location: Edinburgh, UK
Language: English Document Type: Conference Paper (PA); Journal Paper (JP)
Treatment: Theoretical (T)
Abstract: Construction and civil engineering projects include large numbers of design elements, materials, activities, in addition to a diversity of data types and complex relationships. The need to adopt appropriate representational schemes and database technologies that can handle complex data types and relationships continues to hinder the search for solutions to an integrated design-construction environment. The paper describes a scheme that classifies and codes design information to support an integrated building design data **model** . The **model** is conceptual and based on the object-oriented paradigm. It uses concepts such as objects, attributes and different relations between objects. The main feature of the **model** is a set of **hierarchies** of design objects which have classes for describing the various aspects of design elements of a building. These classes represent elements, materials, **geometry** and construction activities represented by work sections. The **model** provides classes of data items from which the designer can select to **model** the various **pieces** of design **elements** and their associated work sections. Attributes provide information included in design and construction documents like drawings, specifications and bills of quantities. The **model** deals with a diversity of data abstracts including multimedia features like sound and video that can be stored in different design documents. (19 Refs)
Subfile: C
Descriptors: abstract data types; architectural **CAD** ; building; multimedia computing; object-oriented databases
Identifiers: integrated building design/construction environment; neutral object data **model** ; civil engineering projects; construction projects; data types; representational schemes; database technologies; complex data types; design information; integrated building design data **model** ; object-oriented paradigm; objects; attributes; design object **hierarchies** ; **geometry** ; materials; design elements; data items; work sections; drawings ; specifications; bills of quantities
Class Codes: C7440 (Civil and mechanical engineering computing); C6160J (Object-oriented databases); C6120 (File organisation); C6130M (Multimedia)

14/5/5 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

1369148 NTIS Accession Number: N88-19119/2
Hierarchical **Structure for Automatic Meshing and Adaptive Fem Analysis**
Kela, A. ; Saxena, M. ; Perucchio, R.
General Electric Co., Schenectady, NY.
Corp. Source Codes: 005452000; GK691154
Sponsor: National Aeronautics and Space Administration, Washington, DC.
12 May 87 34p
Languages: English
Journal Announcement: GRAI8814; STAR2611
In Rensselaer Polytechnic Inst., Workshop on the Integration of Finite Element Modeling with Geometric Modeling 34 p.
NTIS Prices: (Order as N88-19111/9, PC A15/MF A01)
Country of Publication: United States
Contract No.: NSF ECS-81-04646; NSF DMC-84-03882
A new algorithm for generating automatically, from solid **models** of mechanical **parts** , finite **element** meshes that are organized as spatially addressable quaternary **trees** (for 2-D work) or octal **trees** (for 3-D work) is discussed. Because such meshes are inherently **hierarchical** as well as spatially addressable, they permit efficient substructuring techniques to be used for both global analysis and incremental remeshing and reanalysis. The global and incremental techniques are summarized and some results from an experimental closed loop 2-D system in which meshing, analysis, error evaluation, and remeshing and reanalysis are done automatically and adaptively are presented. The implementation of 3-D work is briefly discussed.
Descriptors: *Computational grids; * **Descriptive geometry** ; *Finite element method; Algorithms; **Hierarchies** ; Automatic control; **Computer aided design** ; Computer graphics; Computer programs; Error analysis; **Trees** (Mathematics)
Identifiers: ***Geometric** modelling; NTISNASA
Section Headings: 62B (Computers, Control, and Information Theory--Computer Software)

22/5/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

07551460 INSPEC Abstract Number: B2000-05-2570A-028, C2000-05-5210B-045
Title: A model **of the distribution of interconnectivity through multiple system levels and the impact of different design strategies and IP re-use on design effort**
Author(s): Palmer, P.J.; Williams, D.J.
Author Affiliation: Dept. Manuf. Eng., Loughborough Univ., UK
Conference Title: Twenty Fourth IEEE/CPMT International Electronics Manufacturing Technology Symposium (Cat. No.99CH36330) p.170-7
Publisher: IEEE, Piscataway, NJ,USA
Publication Date: 1999 Country of Publication: USA xiv+479 pp.
ISBN: 0 7803 5502 4 Material Identity Number: XX-1999-02924
U.S. Copyright Clearance Center Code: 0 7803 5502 4/99/$10.00
Conference Title: Twenty Fourth IEEE/CPMT International Electronics Manufacturing Technology Symposium
Conference Sponsor: IEEE; Semicond. Equipment and Mater. Int
Conference Date: 18-19 Oct. 1999 Conference Location: Austin, TX, USA
Language: English Document Type: Conference Paper (PA)
Treatment: Practical (P); Theoretical (T)
Abstract: The equation for design effort derived by Ueda et al (1996) is used as a starting point for the development of a **model** of design effort in **hierarchical** electronic systems. The fundamental assertion is that design effort can be regarded as a function of the number of modules that have to be interconnected. This paper also introduces a measure of system **hierarchy** and the impact of this measure on systems of **different sizes** explored. The **model** is then developed to include any number of system levels. A numerical exploration of the **model** shows that for any **hierarchical** system there is an optimum degree of modularity that minimises design effort. The **model** is extended to encompass the impact of design re-use and suggests that the conditions for maximum benefits of design re-use require greater **hierarchy** than systems with no re-use. The **model** results indicate that the relationship between cost and system complexity is **geometric** in nature and in this sense is compatible with those of other attempts to **model** design costs. The partitioning of a system into modules is typically decided at an early stage of the design process. These decisions are shown to have a major impact on design cost, but are difficult to alter once the design work has been started. We conclude that there is a need for design tools to evaluate the cost impact of partitioning decisions at a very early stage in the design process and a need to include the impact of system structure in cost estimation **models** .
(7 Refs)
Subfile: B C
Descriptors: circuit complexity; circuit layout **CAD** ; costing; integrated circuit design; integrated circuit interconnections; logic **CAD** ; logic partitioning; modules
Identifiers: interconnectivity distribution **model** ; multiple system levels; design strategies; IP re-use; design effort; design effort **model** ; **hierarchical** electronic systems; module interconnection; system **hierarchy** ; system size; system levels; numerical exploration; optimum modularity; design effort minimisation; design re-use; system complexity; system cost; design costs; system partitioning; design process; design tools; partitioning cost impact; cost estimation **models** ; system structure
Class Codes: B2570A (Semiconductor integrated circuit design, layout, modelling and testing); B1265A (Digital circuit design, modelling and testing); B1130B (Computer-aided circuit analysis and design); C5210B (Computer-aided logic design); C7410D (Electronic engineering computing); C4240C (Computational complexity)

22/5/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC

04507530 INSPEC Abstract Number: C90001443

Title: Hierarchical **octree approximations for boundary representation-based** geometric models

Author(s): Kela, A.
Author Affiliation: Corp. Res. & Dev., General Electric Co., Schenectady, NY, USA

Journal: Computer Aided Design vol.21, no.6 p.355-62
Publication Date: July-Aug. 1989 Country of Publication: UK
CODEN: CAIDA5 ISSN: 0010-4485
U.S. Copyright Clearance Center Code: 0010-4485/89/060355-08$03.00
Language: English Document Type: Journal Paper (JP)
Treatment: Practical (P)

Abstract: The advent of solid modelling systems, in principle, permits the automation of any kind of **geometric** application. An octree representation which approximates **geometric models** by **variably sized** solid cubes, is a popular representation structure that is used in a variety of applications such as finite element mesh generation, motion planning, interference detection, etc. In theory, octree approximation of objects can be derived from any solid modelling systems, but the efficiency of the process is closely related to the representation of the original solid **model** . Efficient algorithms for deriving an octree representation of CSG-based modelling systems are known; the paper describes a new algorithm to efficiently compute octree approximations from B-rep solids. (17 Refs)

Subfile: C
Descriptors: computational **geometry** ; solid modelling
Identifiers: **CAD** ; boundary representation-based **geometric models** ; solid modelling systems; **geometric** application; octree representation; solid cubes; finite element mesh generation; motion planning; interference detection; CSG-based modelling systems; B-rep solids
Class Codes: C4130 (Interpolation and function approximation); C6130B (Graphics techniques)

22/5/7 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

01954682 E.I. Monthly No: EI8603019851 E.I. Yearly No: EI86030651
Title: THEORETICAL EXAMINATION OF SWITCHING FUNCTIONS FOR SOLID MODELING DATA STRUCTURES .
Author: Shpitalni, M.
Corporate Source: Technion-Israel Inst of Technology, Faculty of Mechanical Engineering, Haifa, Isr
Source: Journal of Engineering for Industry, Transactions ASME v 108 n 1 Feb 1986 p 27-35
Publication Year: 1986
CODEN: JEFIA8 ISSN: 0022-0817
Language: ENGLISH
Document Type: JA; (Journal Article) Treatment: T; (Theoretical)
Journal Announcement: 8603
Abstract: The role of geometrical modeling is of increasing importance in the field of **CAD** /CAM. In the present paper a new concept is presented for **geometric** modeling of the **data structure** using volumetric representation via switching functions in a Gray coded space (3-D Karnaugh map). The **data structure** consists of a single generic cuboid primitive which may **vary** in **size** and aspect ratios. This provides for more generalized and flexible object representation than uniform spatial occupancy enumeration. The combination of a single primitive, Gray coded space, and representation via switching functions yields a very efficient **data structure** oriented toward set operations which can be carried out via a simple assembler program or a parallel logic processor. As objects are represented by a nonhierarchial list of fixed format terms, uniform algorithms can be used to perform given tasks regardless of object shape, dimensions, or complexity. (Author abstract) 28 refs.
Descriptors: *DATA PROCESSING--* **Data Structures** ; **COMPUTER AIDED DESIGN** ; COMPUTER AIDED MANUFACTURING; MATHEMATICAL **MODELS** --Applications; MACHINE COMPONENTS--Mathematical **Models** ; CODES, SYMBOLIC
Identifiers: GEOMETRICAL MODELING; QUADTREES ENCODING; BINARY CODED SWITCHING FUNCTIONS
Classification Codes:
723 (Computer Software); 601 (Mechanical Design)
72 (COMPUTERS & DATA PROCESSING); 60 (MECHANICAL ENGINEERING)

28/5/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC

02018035 INSPEC Abstract Number: C77007295
Title: Data - structure **for the** description **and handling of engineering drawings**
Author(s): Cavagna, C.; Cugini, U.
Author Affiliation: Politecnico di Milano, Milano, Italy
Journal: Computer Aided Design vol.9, no.1 p.17-22
Publication Date: Jan. 1977 Country of Publication: UK
CODEN: CAIDA5 ISSN: 0010-4485
Language: English Document Type: Journal Paper (JP)
Treatment: Applications (A); Practical (P)
Abstract: The specifications of a **data structure** are essentially linked to the representative **model** , to the functional links to be obtained amongst the various data and the action to be taken on such structure. An engineering drawing is the two-dimensional representation obtained according to precise accepted standards of three-dimensional objects. The **data - structure** , therefore, which represents an engineering drawing must contain all the connections among the two-dimensional **graphic elements** of which the **drawing** is composed. It should also contain a complete **description** of the three-dimensional object represented to allow action on the drawing at any level through its two-dimensional representation. On the other hand, an analysis of the various phases of the design process which lead to the production of final working drawings will show that the three-dimensional **model** of the mechanical part becomes increasingly detailed and complex, as are the drawings used to illustrate it. (6 Refs)
Subfile: C
Descriptors: **CAD** ; **data structures** ; engineering computing
Identifiers: engineering drawings; **data structure** ; **CAD**
Class Codes: C6120 (File organisation); C7400 (Engineering)

28/5/5 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

1895963 NTIS Accession Number: N95-28771/0
Parametric Design and Gridding Through Relational Geometry
Letcher, J. S. ; Shook, D. M.
AeroHydro, Inc., Southwest Harbor, ME.
Corp. Source Codes: 110949000; AE232291
Sponsor: National Aeronautics and Space Administration, Washington, DC.
Mar 95 18p
Languages: English
Journal Announcement: GRAI9520; STAR3310
In NASA. Lewis Research Center, Surface Modeling, Grid Generation, and Related Issues in Computational Fluid Dynamic (Cfd) Solutions p 783-800.
NTIS Prices: (Order as N95-28723, PC A99/MF E08)
Country of Publication: United States
Contract No.: N00167-95-C-0003

Relational **Geometric** Synthesis (RGS) is a new logical framework for building up precise definitions of complex **geometric models** from points, curves, surfaces and solids. RGS achieves unprecedented design flexibility by supporting a rich variety of useful curve and surface entities. During the design process, many qualitative and quantitative relationships between elementary objects may be captured and retained in a **data structure** equivalent to a directed graph, such that they can be utilized for automatically updating the complete **model geometry** following changes in the shape or location of an underlying object. Capture of relationships enables many new possibilities for parametric variations and optimization. Examples are given of panelization applications for submarines, sailing yachts, offshore structures, and propellers.

Descriptors: *Computational **geometry** ; *Curves (**Geometry**); * **Data structures** ; *Mathematical **models** ; *Parameterization; *Points; *Solids; *Surface properties; *Three dimensional **models** ; Computational fluid dynamics; Computer **graphics** ; Finite **element** method; Position (Location) ; Topology
Identifiers: NTISNASA
Section Headings: 62B (Computers, Control, and Information Theory--Computer Software); 46B (Physics--Fluid Mechanics); 41A (Manufacturing Technology--Computer Aided Design (CAD))

28/5/8 (Item 4 from file: 6)
DIALOG(R)File 6:NTIS

1369141 NTIS Accession Number: N88-19112/7
Integration of Finite Element Modeling with Solid Modeling Through a Dynamic Interface
Shephard, M. S.
Rensselaer Polytechnic Inst., Troy, NY.
Corp. Source Codes: 024503000; RO935231
Sponsor: National Aeronautics and Space Administration, Washington, DC.
12 May 87 12p
Languages: English
Journal Announcement: GRAI8814; STAR2611
In Its Workshop on the Integration of Finite Element Modeling with Geometric Modeling 12 p.
NTIS Prices: (Order as N88-19111/9, PC A15/MF A01)
Country of Publication: United States
Finite element modeling is dominated by **geometric** modeling type operations. Therefore, an effective interface to **geometric** modeling requires access to both the **model** and the modeling functionality used to create it. The use of a dynamic interface that addresses these needs through the use of boundary **data structures** and **geometric** operators is discussed.
Descriptors: *Computer **graphics** ; *Finite **element** method; *Mathematical **models** ; * **Computer aided design** ; Systems integration; Algorithms; Computational grids; **Descriptive geometry** ; Topology
Identifiers: ***Geometric** modeling; NTISNASA
Section Headings: 62B (Computers, Control, and Information Theory--Computer Software)

28/5/9 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05583895 E.I. No: EIP00065213456

Title: Novel FEM-based dynamic framework for subdivision surfaces
Author: Mandal, C.; Qin, H.; Vemuri, B.C.
Corporate Source: Sun Microsystems, Inc, Chelmsford, MA, USA
Source: CAD Computer Aided Design v 32 n 8 2000. p 479-497
Publication Year: 2000
CODEN: CAIDA5 ISSN: 0010-4485
Language: English
Document Type: JA; (Journal Article) Treatment: T; (Theoretical)
Journal Announcement: 0007W5

Abstract: Recursive subdivision on an initial control mesh generates a visually pleasing smooth surface in the limit. Nevertheless, users must carefully specify the initial mesh and/or painstakingly manipulate the control vertices at different levels of subdivision **hierarchy** to satisfy a diverse set of functional requirements and aesthetic criteria in the limit shape. This modeling drawback results from the lack of direct manipulation tools for the limit **geometric** shape. To improve the efficiency of interactive **geometric** modeling and engineering design, in this paper we integrate novel physics-based modeling techniques with powerful **geometric** subdivision principles, and develop a unified finite element method (FEM)-based methodology for arbitrary subdivision schemes. Strongly inspired by the recent research on Dynamic Non-Uniform Rational B-Splines (D-NURBS), we formulate and develop a dynamic framework that permits users to directly manipulate the limit surface obtained from any subdivision procedure via simulated `force' tools. The most significant contribution of our unified approach is the formulation of the limit surface of an arbitrary subdivision scheme as being composed of a single type of novel finite element. The specific **geometric** and dynamic features of our subdivision-based finite elements depend on the subdivision scheme used. We present our novel FEM for the modified butterfly and Catmull-Clark subdivision schemes, and generalize our dynamic framework to be applicable to other subdivision schemes. Our FEM-based approach significantly advances the state-of-the-art in physics-based **geometric** modeling since it provides a universal physics-based framework for any subdivision scheme. In addition, we systematically devise a mechanism that allows users to directly (not via control meshes) deform any subdivision surface; finally, we represent the limit surface of any subdivision scheme using a collection of subdivision-based novel finite elements. Our experiments demonstrate that the new unified FEM-based framework not only promises a greater potential for subdivision techniques in solid modeling, finite element analysis, and engineering design, but that it will further foster the applicability of subdivision **geometry** in a wide **range** of visual computing applications such as visualization, virtual reality, computer graphics, computer vision, robotics, and medical imaging as well. (Author abstract) 29 Refs.

Descriptors: *Computational **geometry** ; **Computer aided design** ; Computer simulation; Mathematical **models** ; Finite **element** method; Interactive computer **graphics**
Identifiers: Computer aided **geometric** design (CAGD)
Classification Codes:
723.5 (Computer Applications); 921.4 (Combinatorial Mathematics, Includes Graph Theory, Set Theory); 921.6 (Numerical Methods)
723 (Computer Software); 921 (Applied Mathematics)
72 (COMPUTERS & DATA PROCESSING); 92 (ENGINEERING MATHEMATICS)

28/5/10 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05516966 E.I. No: EIP00045106630
Title: On CAD **databases**
Author: Liu, Mengchi
Corporate Source: Univ of Regina, Regina, Sask, Can
Conference Title: 1999 IEEE Canadian Conference on Electrical and Computer Engineering 'Engineering Solutions for the Next Millennium'
Conference Location: Edmonton, Alberta, Can Conference Date: 19990509-19990512
E.I. Conference No.: 56427
Source: Canadian Conference on Electrical and Computer Engineering v 1 1999. p 325-330
Publication Year: 1999
CODEN: CCCEFV ISSN: 0840-7789
Language: English
Document Type: JA; (Journal Article) Treatment: A; (Applications); T; (Theoretical)
Journal Announcement: 0005W3
Abstract: **CAD** data has some unique characteristics that make its management difficult. The design of a **CAD** object usually has a complex structure that involves large volumes of data. Besides, in many **CAD** situations, the designed object has many aspects of data to be stored and may be updated later. It may also be used in the design of a more complex objects, and may in turn consist of lower level components. When a lower level component is changed, the higher level component that contained it should either be changed automatically or become invalid. All these different aspects of data need to be stored and dealt with properly in an integrated environment that can accessed by different **CAD** utilities so that the cost of storing, maintaining and accessing these objects is minimum. Traditionally, **CAD** data is handled with **file systems** rather than database systems. In this paper, we discuss how various database technology can be used to support the **storage** and access of large volumes of **CAD** data with a complex structure. (Author abstract) 20 Refs.
Descriptors: ***Computer aided design** ; Database systems; Data handling; **Data structures** ; Data **storage** equipment; Computational **geometry** ; Mathematical **models** ; Computer **graphics** ; Optimization; Finite **element** method
Identifiers: **Geometric** modelling; Engineering analysis
Classification Codes:
723.5 (Computer Applications); 723.3 (Database Systems); 723.2 (Data Processing); 722.1 (Data Storage, Equipment & Techniques); 921.4 (Combinatorial Mathematics, Includes Graph Theory, Set Theory); 921.5 (Optimization Techniques)
723 (Computer Software); 722 (Computer Hardware); 921 (Applied Mathematics)
72 (COMPUTERS & DATA PROCESSING); 92 (ENGINEERING MATHEMATICS)

28/5/12 (Item 4 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03750527 E.I. No: EIP93111131765
Title: Reconstruction of B-rep solid models **from finite element meshes for design automation**
Author: Jablokow, Andrei G.; Abraham, Isaac
Corporate Source: Pennsylvania State Univ, University Park, PA, USA
Conference Title: Proceedings of the 19th Annual ASME Design Automation Conference. part 2 (of 2)
Conference Location: Albuquerque, NM, USA Conference Date: 19930919-19930922
Sponsor: ASME, The Design Engineering Division
E.I. Conference No.: 19400
Source: Advances in Design Automation American Society of Mechanical Engineers, Design Engineering Division (Publication) DE v 65 pt 2 1993. Publ by ASME, New York, NY, USA. p 47-59
Publication Year: 1993
CODEN: AMEDEH ISBN: 0-7918-1181-6
Language: English
Document Type: CA; (Conference Article) Treatment: T; (Theoretical)
Journal Announcement: 9401W2
Abstract: This paper presents the integration of Finite Element (FE) techniques with B-rep solid modeling. Algorithms for constructing B-rep solid **models** from a finite element meshes are presented. The finite element mesh data, which consists of node coordinates and connectivity information, is read in from any standard finite element analysis package (currently SDRC IDEAS and MSC/XL) and then processed to construct a polyhedral non-manifold B-rep solid **model** of the **geometry** . Since the finite element mesh of a solid object is essentially a non-manifold object, existing **geometric** modeling **data structures** based on two-manifold topologies cannot represent it directly. In this work the non-manifold radial-edge **data structure** is used for the internal representation of the finite element mesh. The mesh is then processed using non-manifold topology operators to eliminate internal nodes and elements to arrive at the solid **model** that is a polyhedral boundary representation. The results are useful for design automation through the integration of **CAD** with finite element analysis, shape optimization, as well as the manufacturing of **geometry** stored as a finite element mesh. (Author abstract) refs.
Descriptors: *Mathematical **models** ; **Image** reconstruction; Finite **element** method; **Computer aided design** ; Automation; Algorithms; **Geometry** ; Topology; **Data structures** ; Optimization
Identifiers: B-rep solid **models** ; Finite element meshes; Design automation; Node coordinates; Connectivity information; Software package: SDRC IDEAS; Software package: MSC/XL
Classification Codes:
913.4.2 (Computer Aided Manufacturing)
921.6 (Numerical Methods); 723.2 (Data Processing); 723.5 (Computer Applications); 921.5 (Optimization Techniques); 913.4 (Manufacturing)
921 (Applied Mathematics); 723 (Computer Software); 913 (Production Planning & Control)
92 (ENGINEERING MATHEMATICS); 72 (COMPUTERS & DATA PROCESSING); 91 (ENGINEERING MANAGEMENT)

28/5/15 (Item 1 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online

01611581 ORDER NO: NOT AVAILABLE FROM UNIVERSITY MICROFILMS INT'L.
GENERIC REPRESENTATIONS: AN APPROACH FOR MODELLING PROCEDURAL AND DECLARATIVE KNOWLEDGE OF BUILDING TYPES IN ARCHITECTURAL DESIGN

Author: ACHTEN, HENRI
Degree: DR.
Year: 1997
Corporate Source/Institution: TECHNISCHE UNIVERSITEIT EINDHOVEN (THE NETHERLANDS) (0426)
Source: VOLUME 59/01-C OF DISSERTATION ABSTRACTS INTERNATIONAL. PAGE 1. 226 PAGES
Descriptors: ARCHITECTURE
Descriptor Codes: 0729
ISBN: 90-6814-546-0
Publisher: TECHNISCHE UNIVERSITEIT EINDHOVEN, FACULTEIT BOUWKUNDE, VAKGROEP ARCHITECTUUR, URBANISTIEK EN BEHEER, EINDHOVEN, THE NETHERLANDS

The building type is a knowledge structure that is recognised as an important element in the architectural design process. For an architect, the type provides information about norms, layout, appearance, etc. of the kind of building that is being designed. Questions that seem unresolved about (computational) approaches to building types are the relationship between the many kinds of instances that are generally recognised as belonging to a particular building type, the way a type can deal with varying briefs (or with mixed use), and how a type can accommodate different sites. Approaches that aim to **model** building types as **data structures** of interrelated variables (so-called 'prototypes') face problems clarifying these questions. The research work at hand proposes to investigate the role of knowledge associated with building types in the design process.

Knowledge of the building type must be represented during the design process. Therefore, it is necessary to find a representation which supports design decisions, supports the changes and transformations of the design during the design process, encompasses knowledge of the design task, and which relates to the way architects design. It is proposed in the research work that graphic representations can be used as a medium to encode knowledge of the building type.

A graphic representation consists of graphic entities such as vertices, lines, planes, shapes, symbols, etc. Establishing a graphic representation implies making design decisions with respect to these entities. Therefore it is necessary to **identify** the **elements** of the **graphic** representation that play a role in decision making. An approach based on the concept of 'graphic **units** ' is developed. A graphic **unit** is a particular set of graphic entities that has some constant meaning. Examples are: zone, circulation scheme, axial system, and contour. By differentiating between appearance and meaning, it is possible to define the graphic **unit** relatively shape-independent.

If a number of graphic representations have the same graphic **units** , they deal with the same kind of design decisions. Graphic representations that have such a specifically defined knowledge content are called 'generic representations.'

Implementation of seven generic representations in a **computer aided design** system demonstrates the use of generic representations for design support. The set is large enough to provide additional weight to the conclusion that generic representations map declarative and procedural knowledge of the building type. (Abstract shortened by UMI.)